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- Utility Patent Specification -

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Invention:

**HAMMER WRENCH ASSEMBLY AND
METHOD OF USE**

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HAMMER WRENCH ASSEMBLY AND METHOD OF USE

BACKGROUND OF THE INVENTION

1. Field of the Invention

5 The present invention relates to hammer wrenches and, more particularly, to a hammer wrench assembly having an auxiliary safety handle adapted to be rotated up to 180° away from the hammer-end of a hammer wrench.

2. General Background

10 Conventionally, a user would swing a hammer, with one hand, toward a hammer wrench to hit the hammer-end. The impacts by the hammer provide a strong force to rotate a nut or bolt head engaged by the wrench-end of the hammer wrench so that the nut or bolt head is fastened or
15 unfastened. During such hammering the user, with the other hand, grips a central bar member of the hammer wrench to stabilize the hammer wrench about the nut or bolt head. However, the user's forearm, wrist and gripping hand are at risk of being struck by the hammer,
20 especially if the hammer inadvertently misses the intended hammer-end. Even if the hammer hits the hammer-end, in

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some instances, after impact, the hammer slips and hits the forearm, hand or wrist of the hand gripping the hammer wrench. Thus, while the hammer wrench is very useful and effective, its use is also a source of many seriously maiming injuries.

Several devices have been patented which are aimed at wrenches with impact surfaces for striking by a hammer or weight.

U.S. Patent No. 3,799,011, issued to Davis, Jr., entitled "LUG WRENCH," discloses a lug wrench with a handle portion having at one end a ribbed, fluted or knarled rubber or plastic gripping member. At the other end of the handle portion there is a hexagonal socket portion. The lug wrench includes impact arms having impact surfaces for tapping by a hammer. The impact arms, as shown, form acute angles with the handle portion.

U.S. Patent No. 4,864,902, issued to Doorley, entitled "SOCKET WRENCH SLUGGING DEVICE," discloses a striking tool device comprising a cylindrical metal shaft such as is commonly used as an extension shaft in a socket

wrench set. One end of the shaft terminates in a square shank for mating with a socket. The other end of the shaft is a square bore for mating with the drive tang of a ratchet wrench. An arm member is provided that has an
5 anvil-like end portion having striking surfaces for striking by a hammer either in a clockwise or counterclockwise direction. The arm member is coupled about the shaft and is essentially perpendicular to the shaft.

10 U.S. Patent Nos. 291,961 and 271,549, issued to True, both entitled "CARRIAGE WRENCH," disclose a handle having a socket at one end. A pair of weights or balls are coupled to the end of a pair of bars radiating from the handle wherein such weights or balls are adapted to be
15 impacted or tapped. U.S. Patent No. 1,710,198, issued to Torgerson, entitled "SPEED WRENCH," discloses a wrench having a socket coupled to one end of a stock. Heavy weights are coupled to arms wherein the arms radiate from the stock.

20 U.S. Patent No. 2,600,796, issued to Nash, entitled

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"IMPACT ATTACHMENT FOR WHEEL LUG WRENCHES," discloses a lug wrench having four radial arms which terminate at one end into a nut socket. The other end of the radial arms terminate together about a grooved hole. An impact arm is adapted to be pivotally coupled in the grooved hole. Furthermore, the impact arm includes a weight and a handle. As can be readily seen, there is a continuing need for a hammer wrench assembly that allows the hammer-end of a conventional hammer wrench to be used for impaction while removing the hand, forearm and wrist from close proximity of the hammer-end as the hammer-end is impacted.

There is a still continuing need for a hammer wrench assembly that includes an safety handle which when used minimizes the risk of injuring the hand, forearm and wrist of a user gripping the hammer wrench as it is impacted with a hammer.

There is still another continuing need for a hammer wrench assembly that can be used by two people without increasing the risk of injury.

As will be seen more fully below, the present invention is substantially different in structure, methodology and approach from that of other wrenches.

SUMMARY OF THE PRESENT INVENTION

5 The preferred embodiment of the hammer wrench assembly of the present invention solves the aforementioned problems in a straight forward and simple manner.

 Broadly, the present invention contemplates a hammer
10 wrench assembly comprising: a hammer wrench having a hammer-end, a wrench-end and a central bar member separating the hammer-end and the wrench-end; and, a rotatable safety handle pivotally coupled to the hammer wrench between the hammer-end and the wrench-end for
15 holding the hammer wrench about a nut as the hammer-end is impacted with a hammer.

 The present invention contemplates a method for fastening or unfastening a nut, using a hammer wrench assembly having a hammer wrench with a hammer-end and a
20 wrench-end and a pivotal safety handle pivotally

coupleable to the hammer wrench in close proximity to the wrench-end, comprising the steps of: coupling a wrench-end of the hammer wrench about the nut; pivoting the safety handle to a location displaced away from the hammer-end; holding the wrench-end about the nut via the safety handle; simultaneously with the holding step, swinging a hammer to impact the hammer-end; and, rotating the nut with the wrench-end in a direction to fasten or unfasten the nut, in response to the impact to the hammer-end.

In view of the above, an object of the present invention is to provide a hammer wrench assembly and method that is safer to use than prior art hammer wrenches and methods of use thereof.

In view of the above, an object of the present invention is to provide a hammer wrench assembly and method that allows a safety handle to be pivoted to a location within approximately a 180° range.

In view of the above, an object of the present invention is to provide a hammer wrench assembly and method that allows the safety handle to be conveniently

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and easily pivoted to a location within approximately a 180° range.

In view of the above, an object of the present invention is to provide a hammer wrench assembly and method that allows the use of a safety handle which, in operation, is held by the user such that the hand of the user holding such safety handle is at a safe distance away from the zone of hammering of the hammer wrench.

Another object of the present invention is to provide a hammer wrench assembly and method that allows the hammer wrench assembly to be used by one or two people. In a two user operation, one person swings the hammer while the other person holds the safety handle, to secure the hammer wrench, at a location that is up to 180° away from the hammer-end and the striking hammer.

In view of the above objects, it is a feature of the present invention to provide a hammer wrench assembly that is easy to use.

In view of the above objects, it is a feature of the present invention to, in an alternate embodiment, provide

a hammer wrench assembly that can be easily assembled and disassembled.

In view of the above objects, it is a feature of the present invention to, in an alternate embodiment, provide a hammer wrench assembly for which a common tool can be used as the safety handle.

Another feature of the present invention is to provide a hammer wrench assembly that is relatively simple structurally and relies on the design and method of use of a conventional hammer wrench.

A still further object of the present invention is to provide a hammer wrench assembly that minimizes the risk of inadvertent striking of the user or users hand, forearm or wrist during operation.

The above and other objects and features of the present invention will become apparent from the drawings, the description given herein, and the appended claims.

BRIEF DESCRIPTION OF THE DRAWING

For a further understanding of the nature and objects

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of the present invention, reference should be had to the following description taken in conjunction with the accompanying drawings in which like parts are given like reference numerals and, wherein:

5 **FIGURE 1** illustrates a top plan view of the hammer wrench in accordance with a first embodiment of the present invention;

FIGURE 2 illustrates a side plan view of the hammer wrench in accordance with the first embodiment of
10 the present invention in **FIGURE 1**;

FIGURE 3 illustrates an exploded view of the hammer wrench assembly in accordance with the first embodiment of the present invention in **FIGURE 1**;

FIGURE 4 illustrates a top plan view of the
15 hammer wrench in accordance with a second embodiment of the present invention;

FIGURE 5 illustrates a side plan view of the hammer wrench in accordance with the second embodiment of the present invention in **FIGURE 4**; and,

20 **FIGURE 6** illustrates a perspective view of the

hammer wrench assembly in accordance with the first embodiment present invention in **FIGURE 3** employed in use.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

5 Referring now to the drawings and in particular **FIGURES 3** and **6**, the hammer wrench assembly of the present invention is generally referenced by the numeral **10**. The hammer wrench assembly **10** includes a hammer wrench **20** and a removable safety handle **40** wherein the removable
10 safety handle **40** provides a support for holding the hammer wrench **20** while simultaneously displacing a user's hand from the hammer-end **22** of the hammer wrench **20**.

Referring also to **FIGURES 1** and **2**, a first embodiment of the hammer wrench **20** is shown. The hammer wrench **20** is
15 similar to a standard (off-the-shelf) hammer wrench having an anvil or hammer-end **22** and a closed wrench (nut socket) or wrench-end **24** in fixed space relation by a central bar member **26**. The hammer-end **22** has a generally three-dimensional rectangular shape (although other shapes that
20 could support an anvil-like function could be used for the

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hammer-end). The three-dimensional rectangular shape provides a plurality of impact surfaces (only three shown) **28a**, **28b** and **28c** (**FIGS. 3** and **6**) wherein the four sides of the rectangular shape provide four impact surfaces.

5 The hammer-end **22** is integrally formed with the central bar member **26** and such central bar member **26** has a generally cylindrical shape. Nevertheless, other shapes may be substituted and yet allows for the longitudinal axis of the central bar member **26** to be aligned with a
10 center of the wrench-end **24**. Also, a hammer wrench with other configurations of the hammer-end **22** in relation to the wrench-end **24** (such as, but not limited to, where the hammer-end **22** is offset, or at an angle to, the central bar member **26** but yet still supports correct operation in
15 rotating the nut **6** in the wrench-end **24** when impacted by a hammer **5**) could also be likewise adapted with the female fitting **30** to achieve, make and practice the invention.

 In conventional use, the central bar member **26** is generally cylindrically shaped to provide a gripping
20 surface to hold or steady the hammer wrench **20** about the

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bolt head or nut 6 to be loosened or tightened. Such conventional use is a first mode of operation of the hammer wrench assembly 10.

The central bar member 26 is fitted with a female fitting 30 positioned closer to the wrench-end 24 than the hammer-end 22 and, in a most preferred embodiment, just below the wrench-end 24. In the exemplary embodiment, the female fitting 30 comprises a generally square bore hole 32 extending through the central bar member 26. In the exemplary embodiment, the bore hole 32 has a center axis that is aligned (essentially parallel and essentially in the same plane) with the center axis 25 of the wrench-end 24, and perpendicular to the longitudinal axis 23 of the central bar member 26. The female fitting 30 further comprises a pair of bore holes 34 penetrating the bore hole 32 for use in locking or securing the safety handle 40 to the hammer wrench 20. Generally, the female fitting 30 should be adapted to accommodate and operate with whatever securing or locking feature is present on the male fitting 50. In the exemplary embodiment, the pair of

bore holes 34 have the same center axis which is perpendicular to the center axis 27 of the square bore hole 32 and perpendicular to the longitudinal axis 23 of the central bar member 26. The female fitting 30 may, in lieu of a pair of bore holes 34, have only one of the pair of bore holes 34; and, in such case, the invention would still operate but might be less efficient or convenient.

From a different perspective, the relationship between the wrench-end 24 and the bore hole 32 is such that the wrench-end face 62 (which face 62 is in the plane perpendicular to the center axis 25 of the wrench-end 24) and the mounting face 64 of the bore hole 32 of the female fitting 30 (which mounting face 64 is in the plane perpendicular to the center axis 27 of the bore hole 32) face the same direction, or substantially so. In operation, as best seen in FIG. 6, this arrangement of the wrench-end face 62 and the mounting face 64 serves to advantageously distance the user's arm 3 and hand and fingers 2 from the hammer path or strike zone 8.

In the exemplary embodiment of **FIGS. 1** and **2**, the wrench-end **24** is sloped or offset from the longitudinal axis of the central bar member **26** via elbow **26a**. Elbow **26a** lowers the wrench-end **24** while maintaining the center axis of the wrench-end **24** aligned perpendicular to the longitudinal axis of the central bar member **26**. Furthermore, the wrench-end **24** has a multi-sided bore hole or nut socket.

FIGS. 4 and **5** illustrate an alternate embodiment of the hammer wrench **20'**. The hammer wrench **20'** differs from the hammer wrench **20** of **FIGS. 1** and **2** in that the wrench-end **24'** has a hexagonal-shaped hole or nut socket. Furthermore, the wrench-end **24'** is not sloped or offset from the hammer-end **22'** by an elbow. Instead, an adapter **26a'** is inserted between the end of the central bar member **26** and the wrench-end **24'**. Such adapter **26a'** includes top and bottom surfaces that taper toward the wrench-end **24'**.

Referring again to **FIGS. 3** and **6**, the safety handle **40** is made of metal (like the hammer wrenches **20** and **20'**) and comprises an elongated central bar member **42** having

one end serving as a handle section 44. The handle section 44 has a larger diameter than the diameter of the elongated central bar member 42. Moreover, the handle section 44 has a generally slip-resistant perimeter surface 46.

In the exemplary embodiment, the handle section 44 has score-lines formed therein to create friction between the user's hand 2 and the handle section 44. In an alternate embodiment, the handle section 44 may include a rubber jacket or other applique that creates friction with the user's hand 2. The other end of the elongated central bar member 42 includes a forked-end 48 having two parallel and spaced apart plates 48a and 48b.

The safety handle 40 further comprises a male fitting 50 that is pivotally coupled to and pivots between plates 48a and 48b via pivot coupling 52. The male fitting 50 is adapted to mate with the female fitting 30. The male fitting 48 includes a prong 54 adapted to fit in the square bore hole 32 and a spring-biased ball or pin 56 that fits in one of the pair of bore holes 34 to secure

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the safety handle 40 to the hammer wrench 20. The spring-biased ball or pin 56 can be removed from one of the bore holes 34 so that the hammer wrench assembly 10 can be easily stored or to use the hammer wrench 20 without the safety handle 40.

In a preferred embodiment, the safety handle 40 is a tool which is commonly available and, in a most preferred embodiment, is a tool used with standard socket sets or, at least, used for purposes other than this invention. Thus, in general, the invention includes the idea or concept to use a female fitting 30 which mates with a tool already used by, and in the toolbox of the user, wherein such tool serves as the safety handle 40.

Referring now to FIG. 6, the pivot coupling 52 allows the safety handle 40 to pivot within a 180° range. However, in FIG. 6, the safety handle 40 is shown rotated to one of many angles with respect to the hammer wrench 20. This allows a single user to hold the hammer wrench 20 about nut 6 while swinging the hammer 5 to impact one of the impact surfaces (only three shown) 28a, 28b and 28c

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of the hammer-end 22.

The advantage of the safety handle 40 is that it moves the user's hand 2, forearm 3 and wrist away from the path or strike zone 8 of the hammer 5 when it is swung just in case the hammer 5 inadvertently misses or glances-off the hammer-end 22. The above described operation is for a single user operation mode.

Referring still to FIG. 6, another advantage of the safety handle 40 is that it can be held by another user without risking injury when the hammer 5 is swung. For very hard-to-loosen or tighten bolt heads or nuts 6, two user operation mode can be used to loosen the bolt head or nut 6 without obstructing or limiting access to the impact surfaces (only three shown) 28a, 28b and 28c. For example, a first user could rotate the elongated central bar member 42 so that the handle section 44 is positioned away from (such as, without limitation 90° to 120°) the hammer-end 22 and stand away from the hammer-end 22 and out of the path needed to swing the hammer 5 when hitting the impact surfaces (only three shown) 28a, 28b and 28c.

The two user operation mode also leaves both hands available for gripping and swinging the hammer 5. Accordingly, the hand, forearms and wrists of the two users are not in close proximity of the hammer-end 22 and its impact surfaces. Thus, I speculate, risk of injury is significantly minimized when using the hammer wrench assembly 10.

Because many varying and differing embodiments may be made within the scope of the inventive concept herein taught and because many modifications may be made in the embodiment herein detailed in accordance with the descriptive requirement of the law, it is to be understood that the details herein are to be interpreted as illustrative and not in a limiting sense.